DETERMINATION OF PARTICULATE RESUSPENSION AND MIXING NEAR AN OCEAN OUTFALL USING HYPERSPECTRAL OCEAN COLOR IMAGERY

Michael Hamilton, Curtiss O. Davis

Jet propulsion Laboratory
California Institute of Technology
4800 Oak Grove. Drive
Pasadena, CA 91109
(818) 354 58G9
(81 8) 393-6720 (fax)

In-water apparent optical properties, spectral reflectance at the sea surface, and an AVIRIS image were acquired simultaneously in the vicinity of an ocean outfall. Sampling was subsequent to several days of storms and nearby mooring data suggest a resuspension of outfall sediments in response to increased currents. The sediment plume is clearly visible in a derivative image, centered at the shoulder of the sediment reflectance feature at 590 nm.

Instability waves caused by the relative motion of two fluids of different density are seen along the interface between water containing resuspended particles and the clearer offshore water mass. The rate of mixing of the particulates into the surrounding waters can be estimated from the spatial scale of interfingering along the front.

This result suggests that coastal monitoring with high-spectral and spatial resolution optical devices may be useful in determining the mixing and areal extent of sewage spills and resuspended effluent and the threat posed to nearby beach areas.